## AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

## Listing of Claims:

1      1.      (Currently Amended) A method for enhancing reliability,
2   availability and serviceability in a computer system by replacing a signal from a
3   failed sensor with an estimated signal derived from correlations with other
4   instrumentation signals in the computer system, comprising:
5          determining whether a sensor has failed in the computer system, wherein
6   an output signal from the sensor is applied to an input; and
7          applying an estimated signal to the input in response to determining that
8   the sensor has failed, whereby the computer system can continue operating
9   without the failed sensor;
10         wherein the estimated signal is derived from correlations with other
11  instrumentation signals, wherein the instrumentation signals include at least one
12  of:
13              signals associated with internal performance parameters
14         maintained by software within the computer system;
15              signals associated with physical performance parameters measured
16         through sensors within the computer system; and
17              signals associated with canary performance parameters for
18         synthetic user transactions, which are periodically generated for the
19         purpose of measuring quality of service from an end user's perspective
20         ~~that include at least one of:~~
21              ~~a signal associated with an internal performance parameter;~~

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22               ~~a signal associated with a physical performance parameter;~~

23       ~~and~~

24               ~~a signal associated with a canary performance parameter.~~


1       2.      (Previously Presented) The method of claim 1, wherein

2 determining whether the sensor has failed involves:

3       comparing the output signal from the sensor with the estimated signal to

4 determine whether the sensor has failed.


1       3.      (Previously Presented) The method of claim 2, wherein comparing

2 the output signal from the sensor with the estimated signal involves using

3 sequential detection methods to detect changes in the relationship between the

4 output signal from the sensor and the estimated signal.


1       4.      (Original) The method of claim 3, wherein the sequential detection

2 methods include the Sequential Probability Ratio Test (SPRT).


1       5.      (Original) The method of claim 1, wherein prior to determining

2 whether the sensor has failed, the method further comprises determining

3 correlations between instrumentation signals in the computer system, whereby the

4 correlations can subsequently be used to generate estimated signals.


1       6.      (Original) The method of claim 5, wherein determining the

2 correlations involves using a non-linear, non-parametric regression technique to

3 determine the correlations.

1  7.  (Original) The method of claim 6, wherein the non-linear, non-
2 parametric regression technique can include a multivariate state estimation
3 technique.

1  8.  (Original) The method of claim 5, wherein determining the
2 correlations can involve using a neural network to determine the correlations.

1  9.  (Canceled).

1  10.  (Original) The method of claim 1, wherein the failed sensor can be
2 a sensor that has totally failed, or a sensor with degraded performance.

1  11.  (Currently Amended) A computer-readable storage medium
2 storing instructions that when executed by a computer cause the computer to
3 perform a method for enhancing reliability, availability and serviceability in a
4 computer system by replacing a signal from a failed sensor with an estimated
5 signal derived from correlations with other instrumentation signals in the
6 computer system, the method comprising:
7  determining whether a sensor has failed in the computer system, wherein
8 an output signal from the sensor is applied to an input; and
9  applying an estimated signal to the input in response to determining that
10 the sensor has failed, whereby the computer system can continue operating
11 without the failed sensor;
12  wherein the estimated signal is derived from correlations with other
13 instrumentation signals, wherein the instrumentation signals include at least one
14 of:
15  signals associated with internal performance parameters
16 maintained by software within the computer system;

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17            signals associated with physical performance parameters measured

18            through sensors within the computer system; and

19            signals associated with canary performance parameters for

20            synthetic user transactions, which are periodically generated for the

21            purpose of measuring quality of service from an end user's perspective

22            ~~that include at least one of:~~

23            ~~a signal associated with an internal performance parameter;~~

24            ~~a signal associated with a physical performance parameter;~~

25            ~~and~~

26            ~~a signal associated with a canary performance parameter~~.


1      12.     (Previously Presented) The computer-readable storage medium of

2 claim 11, wherein determining whether the sensor has failed involves:

3     comparing the output signal from the sensor with the estimated signal to

4 determine whether the sensor has failed.


1      13.     (Previously Presented) The computer-readable storage medium of

2 claim 12, wherein comparing the output signal from the sensor with the estimated

3 signal involves using sequential detection methods to detect changes in the

4 relationship between the output signal from the sensor and the estimated signal.


1      14.     (Original) The computer-readable storage medium of claim 13,

2 wherein the sequential detection methods include the Sequential Probability Ratio

3 Test (SPRT).


1      15.     (Original) The computer-readable storage medium of claim 11,

2 wherein prior to determining whether the sensor has failed, the method further

3 comprises determining correlations between instrumentation signals in the

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4    computer system, whereby the correlations can subsequently be used to generate

5    estimated signals.

1        16.    (Original) The computer-readable storage medium of claim 15,

2    wherein determining the correlations involves using a non-linear, non-parametric

3    regression technique to determine the correlations.

1        17.    (Original) The computer-readable storage medium of claim 16,

2    wherein the non-linear, non-parametric regression technique can include a

3    multivariate state estimation technique.

1        18.    (Original) The computer-readable storage medium of claim 15,

2    wherein determining the correlations can involve using a neural network to

3    determine the correlations.

1        19.    (Canceled).

1        20.    (Original) The computer-readable storage medium of claim 11,

2    wherein the failed sensor can be a sensor that has totally failed, or a sensor with

3    degraded performance.

1        21.    (Currently Amended) An apparatus that enhances reliability,

2    availability and serviceability in a computer system by replacing a signal from a

3    failed sensor with an estimated signal derived from other instrumentation signals

4    correlations with in the computer system, comprising:

5        a failure determination mechanism configured to determine whether a

6    sensor has failed in the computer system, wherein an output signal from the

7    sensor is applied to an input; and

8        a sensor replacement mechanism, wherein if the sensor has failed, the

9    sensor replacement mechanism is configured to apply an estimated signal to the

10   input, whereby the computer system can continue operating without the failed

11   sensor;

12       wherein the estimated signal is derived from correlations with other

13   instrumentation signals, wherein the instrumentation signals include at least one

14   of:

15           signals associated with internal performance parameters

16       maintained by software within the computer system;

17           signals associated with physical performance parameters measured

18       through sensors within the computer system; and

19           signals associated with canary performance parameters for

20       synthetic user transactions, which are periodically generated for the

21       purpose of measuring quality of service from an end user's perspective.

22       ~~that include at least one of:~~

23               ~~a signal associated with an internal performance parameter;~~

24               ~~a signal associated with a physical performance parameter;~~

25       ~~and~~

26               ~~a signal associated with a canary performance parameter.~~


1        22.    (Previously Presented) The apparatus of claim 21, wherein the

2    failure determination mechanism is configured to:

3        compare the output signal from the sensor with the estimated signal to

4    determine whether the sensor has failed.


1        23.    (Previously Presented) The apparatus of claim 22, wherein the

2    failure detection mechanism is configured to use sequential detection methods to

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3     detect changes in the relationship between the output signal from the sensor and

4     the estimated signal.

1     24.    (Original) The apparatus of claim 23, wherein the sequential

2     detection methods include the Sequential Probability Ratio Test (SPRT).

1     25.    (Original) The apparatus of claim 21, further comprising a

2     correlation determination mechanism, which is configured to determine

3     correlations between instrumentation signals in the computer system, whereby the

4     correlations can subsequently be used to generate estimated signals.

1     26.    (Original) The apparatus of claim 25, wherein the correlation

2     determination mechanism is configured to use a non-linear, non-parametric

3     regression technique to determine the correlations.

1     27.    (Original) The apparatus of claim 26, wherein the non-linear, non-

2     parametric regression technique can include a multivariate state estimation

3     technique.

1     28.    (Original) The apparatus of claim 25, wherein the correlation

2     determination mechanism is configured to use a neural network to determine the

3     correlations.

1     29.    (Canceled).

1     30.    (Original) The apparatus of claim 21, wherein the failed sensor can

2     be a sensor that has totally failed, or a sensor with degraded performance.